

## **REMARKS**

In view of the following reasoning for allowance, the applicants hereby respectfully request further examination and reconsideration of the subject application.

**A. Claim Rejection of Claims 6, 15 and 22 under 35 USC 112 second paragraph**

Claims 6, 15 and 22 stand rejected under 35 USC 112, second paragraph, as being indefinite. It is believed that the foregoing amendments to the claims have clarified any indefiniteness that existed in the original claim language.

The Examiner contends that Claims 6 and 15 are confusing because they make reference to a number of intermediary images which are used to create the final image  $I_F$ . The Examiner states that these claims are dependent upon claims 1 and 10 which disclose a process including the step of generating a human interactive proof which employs the use of an image. It is unclear from the claim language as to which specific image is being employed, the final image or any of the intermediary images. The applicants have amended Claims 6 and 15 to clarify the language as to which image is being employed in the human interactive proof.

The Examiner further contends that Claim 22 is unclear because it appears to have improper dependency. In response the applicants have amended claim 22 to correct the claim language.

It is believed the amended claims now fulfill the requirements of 35 USC 112, second paragraph, as they particularly point out and distinctly claim the subject matter which the applicant regards as the invention. Therefore, it is respectfully requested that the rejection of Claims 6, 15 and 22 be reconsidered based on the above-quoted amended claim language.

B. The 35 USC 103 Rejection of Claims 1-4, 7-11, 13, 17-19, 21 and 22.

Claims 1-4, 7-11, 13, 17-19, 21 and 22 were rejected under 35 USC 103(a) as being unpatentable over Tyree USPGPUB No. 2002/0120853 in view of Greg Mori et al "Estimating Human Body Configurations using Shape Context Matching" (herein referred to as Mori. The Examiner contended that Tyree teaches all the elements of the applicants claims but does not teach the applicant's claimed image that contains body parts, and location of such parts, but that Mori teaches an algorithm for locating keypoints within an undistorted image of a body, making the applicant's claimed invention obvious. The applicants respectfully traverse this contention of obviousness.

In order to deem the applicants' claimed invention unpatentable under 35 USC 103, a prima facie showing of obviousness must be made. To make a prima facie showing of obviousness, all of the claimed elements of an applicants' invention must be considered, especially when they are missing from the prior art. If a claimed element is not taught in the prior art and has advantages not appreciated by the prior art, then no prima facie case of obviousness exists. The Federal Circuit court has stated that it was error not to distinguish claims over a combination of prior art references where a material limitation in the claimed system and its purpose was not taught therein (*In Re Fine*, 837 F.2d 107, 5 USPQ2d 1596 (Fed. Cir. 1988)).

"A computer-implemented process for determining whether a computer user is a human or a computer program, comprising the process actions of:  
generating a human interactive proof employing an image of one or more deformed body parts wherein certain features thereof are at known locations in said image;  
requiring a computer user to locate at least one feature of said one or more deformed body parts in the image;  
comparing the computer user's locations of said at least one feature of said one or more deformed body parts to their actual location in the image; and  
determining whether the computer user is a human or a computer program."

And,

"A system for creating a Human Interactive Proof using an image of a face, the system comprising:

a general purpose computing device; and  
a computer program comprising program modules executable by the computing device, wherein the computing device is directed by the program modules of the computer program to,  
**generate a human interactive proof employing an image of a deformed human face wherein certain features are at known locations in said image;**  
**require a computer user to locate certain features of said deformed face in the image;**  
**compare the computer user's locations of said features of said deformed face to their actual location in the image; and**  
determine whether the computer user is a human or a bot."

In contrast, Tyree teaches a technique that can include a test performed by a computer to determine whether a requestor of resources is a human user or a computer software scripted agent. If the test is passed, then the computer of the present invention assumes that the requestor of resources is a valid human user and access to resources is granted. It can be used for controlling access to resources. In an exemplary embodiment the method can include the steps of receiving a request from an entity; presenting the entity with a test; determining from the test whether or not the entity is an intelligent being; and granting the request only if the entity is determined to be an intelligent being. **(Abstract) However, Tyree does not teach the applicant's "requiring a computer user to locate at least one feature of said one or more deformed body parts in the image".**

Mori teaches taking a single two-dimensional image containing a human body, locating the joint positions, and use these to estimate the body configuration and pose in three-dimensional space. The basic approach is to store a number of exemplar 2D views of the human body in a variety of different configurations and viewpoints with respect to the camera. On each of these stored views, the locations of the body joints (left elbow, right knee etc) are manually marked and labelled for future use. The test shape is then matched to each stored view, using the technique of shape context matching. Assuming that there is a stored view sufficiently similar in configuration and pose, the correspondence process will succeed. The locations of the body joints are then transferred from the exemplar view to the test shape.

Given the joint locations, the 3D body configuration and pose are then estimated. However, Mori does not teach the applicant's claimed "requiring a computer user to locate at least one feature of said one or more deformed body parts in the image".

It is also the applicants position that the reasoning as to obviousness presented in the Office Action is flawed. There is nothing to teaching, motivation or suggestion to combine the teachings of Tyree and Mori. The Tyree and Mori inventions are in entirely different fields, address entirely different problems, and nothing in one would suggest the other. Furthermore, more specifically, the Examiner states,

"The security of any human interactive proof is contingent upon the ability of the algorithm to correctly identify elements within the produced tests for comparisons to the user input. The Mori paper discloses an algorithm for locating keypoints within an undistorted image of a body (paragraph 1, pg 1). The basic image then would be understandable to the program prior to its distortion. After transformations (which are known to the program) are applied the resultant image would not be identifiable by body/facial recognition software of the time. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the two in order to increase the level of security offered by the "test", thus improving the marketability of the software product as a whole."

The Examiner appears to suggest that since in Mori the program can locate key points in an undistorted body, it would be implied that it can locate key features in the image if it was distorted. The applicants respectfully disagree. There is nothing in Mori to suggest this implication.

The MPEP states at Section 2112, Part IV (Page 2100-54, Rev 2, May 2004) that:

"**The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic.** *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). "**To establish inherency, the extrinsic evidence 'must**

make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted) ..... "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis added)

The Examiner has not shown that the claimed feature of the applicant's "requiring a computer user to locate at least one feature of said one or more deformed body parts in the image" is taught either expressly or inherently in the Tyree or Mori references. The reasoning for obviousness is flawed in that neither reference teaches a user locating features of deformed body parts in an image. As shown above, the teachings of Mori would not suggest to a person of ordinary skill in the art that a computer user should be required to locate at least one deformed feature of said one or more body parts in the image. Rather the circumstances of the Mori would suggest just the opposite. In Mori a user is used to mark the undeformed features in order to locate the correct parts in order to create a three-dimensional image from two or more two-dimensional ones. There simply is no need for deformed image in Mori and nothing in Mori suggests deforming an image. The mere possibility that Mori could lead someone to think of a way of generating a deformed image is not enough to establish inherency. There must be some teaching that makes the missing element necessary to the described invention of Mori. However, there is no such teaching. Therefore, the claimed feature is not inherent in the teaching of Mori.

Since neither Tyree nor Mori teach the applicants' claimed "requiring a computer user to locate at least one feature of said one or more deformed body parts in the image", the combination does not teach it. Additionally, the Tyree nor Mori references do not teach the advantageous features of the applicants' claimed invention such as providing a more difficult proof to determine if a an entity performing a HIP is a person or a bot. Accordingly, no prima facie case of obviousness has been established in accordance with the holding of *In Re Fine*. This lack of prima facie showing of obviousness means that the rejected claims are patentable under 35 USC 103 over Tyree in view of Mori. As such, it is respectfully requested that Claims 1-4, 7-11, 13, 17-19, 21 and 22 be allowed based on the following exemplary claim language:

"A computer-implemented process for determining whether a computer user is a human or a computer program, comprising the process actions of:  
generating a human interactive proof employing an image of one or more deformed body parts wherein certain features thereof are at known locations in said image;  
requiring a computer user to locate at least one feature of said one or more deformed body parts in the image;  
comparing the computer user's locations of said at least one feature of said one or more deformed body parts to their actual location in the image; and  
determining whether the computer user is a human or a computer program."

And,

"A system for creating a Human Interactive Proof using an image of a face, the system comprising:  
a general purpose computing device; and  
a computer program comprising program modules executable by the computing device, wherein the computing device is directed by the program modules of the computer program to,  
generate a human interactive proof employing an image of a deformed human face wherein certain features are at known locations in said image;  
require a computer user to locate certain features of said deformed face in the image;  
compare the computer user's locations of said features of said deformed face to their actual location in the image; and  
determine whether the computer user is a human or a bot.

C. The 35 USC 103 Rejection of Claim 5.

Claim 5 was rejected under 35 USC 103(a) as being unpatentable over Tyree USPGPUB No. 2002/0120853) in view of Mori and in further view of Luis von Ahn et al. "CAPTCHA: Using Hard AI Problems for Security" hereinafter referred to as Ahn. The Examiner contended that Tyree and Mori teach all the elements of the applicants claims but do not teach the applicant's claimed use of a HIP for online polls, email account services, search engines which are examples of network resources and storage facilities. The Examiner contended it would have been obvious to combine the teachings of Tyree and Mori with Ahn, rendering the applicants claimed invention obvious. The applicants respectfully disagree with this contention of obviousness.

The applicants claim,

A computer-implemented process for determining whether a computer user is a human or a computer program, comprising the process actions of:

generating a human interactive proof employing an image of one or more deformed body parts wherein certain features thereof are at known locations in said image;

requiring a computer user to locate at least one feature of said one or more deformed body parts in the image;

comparing the computer user's locations of said at least one feature of said one or more deformed body parts to their actual location in the image; and

determining whether the computer user is a human or a computer program.

As discussed above, neither Tyree nor Mori teach the applicants' claimed "requiring a computer user to locate at least one feature of said one or more deformed body parts in the image". Ahn also does not teach this limitation, so the combination of Tyree, Mori and Ahn does not teach it. Additionally, the Tyree, Mori and Ahn references do not teach the advantageous features of the applicants' claimed invention such as providing a more difficult proof to determine if a an entity performing a HIP is a person or a bot. Accordingly, no prima facie case of obviousness has been established in accordance with the holding of *In Re Fine*. This lack of prima facie showing of obviousness means that the rejected claims are patentable under 35 USC 103 over Tyree in view of Mori and Ahn. As such, it is

respectfully requested that Claim 5 be allowed based on the following exemplary claim language:

"A computer-implemented process for determining whether a computer user is a human or a computer program, comprising the process actions of:  
generating a **human interactive proof employing an image of one or more deformed body parts** wherein certain features thereof are at known locations in said image;  
requiring a **computer user to locate at least one feature of said one or more deformed body parts in the image**;  
comparing the **computer user's locations of said at least one feature of said one or more deformed body parts to their actual location in the image**; and  
determining whether the computer user is a human or a computer program."

D. **The 35 USC 103 Rejection of Claims 12, 16, 20 and 23-25.**

Claims 12, 16, 20 and 23-25 were rejected under 35 USC 103(a) as being unpatentable over Tyree in view of Mortlock et al., U.S. Patent No. 6,549,200 (hereinafter referred to as Mortlock). The Examiner contended that Tyree teaches all of the elements of the applicants' claims but does not teach the applicant's claimed image of a distorted face embedded in a cluttered background. The Examiner contended that Mortlock discloses the ability to create an image of a human head/face making the applicants' claimed invention obvious. The applicants respectfully disagree with this contention of obviousness.

The applicants claim,

"A system for creating a Human Interactive Proof using an image of a face, the system comprising:  
a general purpose computing device; and  
a computer program comprising program modules executable by the computing device, wherein the computing device is directed by the program modules of the computer program to,  
generate a **human interactive proof employing an image of a deformed human face wherein certain features are at known locations in said image**;  
require a **computer user to locate certain features of said deformed face in the image**;  
compare the **computer user's locations of said features of said deformed face to their actual location in the image**; and

determine whether the computer user is a human or a bot."

And,

"A computer-readable medium having computer-executable instructions for creating a test to determine whether a user is a person or a bot, said computer executable instructions comprising:

**inputting a 3D wire model of a generic head and a texture map of an arbitrary person; and**  
**generating a human interactive proof using said generic head model and texture map."**

In contrast, Tyree teaches a technique that can include a test performed by a computer to determine whether a requestor of resources is a human user or a computer software scripted agent. If the test is passed, then the computer of the present invention assumes that the requestor of resources is a valid human user and access to resources is granted. It can be used for controlling access to resources. In an exemplary embodiment the method can include the steps of receiving a request from an entity; presenting the entity with a test; determining from the test whether or not the entity is an intelligent being; and granting the request only if the entity is determined to be an intelligent being. (Abstract) However, Tyree does not teach the applicant's claimed generation of "a human interactive proof employing an image of a human face wherein certain features are at known locations in said image" or "inputting a 3D wire model of a generic head and a texture map of an arbitrary person; and generating a human interactive proof using said generic head model and texture map."

Mortlock teaches an image representing a three-dimensional object that is modelled as a stored set of parameters representing a model of a three-dimensional object and at least two two-dimensional images of the object, each image representing the object from a unique direction of view (x, y, z). The parameters include parameters defining the positions of a plurality of vertex points in a virtual space and parameters defining relationships between vertex points and hence surface elements of the object. For at least a subset of the surface elements a measure relative to each direction of view is determined, each measure being representative of the deviation of the surface of the element from the normal to the direction of view. The direction of view which exhibits the least deviation is then

identified and texture applied to the surface element from the two-dimensional image which corresponds to the identified direction of view. (Abstract) **However, Mortlock does not teach the applicant's claimed generation of "a human interactive proof employing an image of a human face wherein certain features are at known locations in said image" or "inputting a 3D wire model of a generic head and a texture map of an arbitrary person; and generating a human interactive proof using said generic head model and texture map."**

There is nothing to teaching, motivation or suggestion to combine the teachings of Tyree and Mortlock. The Tyree and Mortlock inventions are in entirely different fields, address entirely different problems, and nothing in one would suggest the other.

Since neither Tyree nor Mortlock teach the applicants' claimed **generation of "a human interactive proof employing an image of a human face wherein certain features are at known locations in said image" or "a inputting a 3D wire model of a generic head and a texture map of an arbitrary person; and generating a human interactive proof using said generic head model and texture map"**, the combination does not teach it. Additionally, the Tyree and Mortlock references do not teach the advantageous features of the applicants' claimed invention such as generating a more effective HIP by using body parts. Accordingly, no *prima facie* case of obviousness has been established in accordance with the holding of *In Re Fine*. This lack of *prima facie* showing of obviousness means that the rejected claims are patentable under 35 USC 103 over Tyree in view of Mortlock. As such, it is respectfully requested that Claims 12, 16, 20 and 23-25 be allowed based on the following exemplary claim language:

"A system for creating a Human Interactive Proof using an image of a face, the system comprising:  
a general purpose computing device; and  
a computer program comprising program modules executable by the computing device, wherein the computing device is directed by the program modules of the computer program to,

generate a human interactive proof employing an image of a deformed human face wherein certain features are at known locations in said image;

require a computer user to locate certain features of said deformed face in the image;

compare the computer user's locations of said features of said deformed face to their actual location in the image; and  
determine whether the computer user is a human or a bot."

And,

"A computer-readable medium having computer-executable instructions for creating a test to determine whether a user is a person or a bot, said computer executable instructions comprising:

inputting a 3D wire model of a generic head and a texture map of an arbitrary person; and

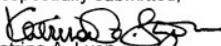
generating a human interactive proof using said generic head model and texture map."

E. Summary.

In summary, it is believed that Claims 1-25 are in condition for allowance.

Allowance of these claims at an early date is courteously solicited.

Respectfully submitted,

  
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